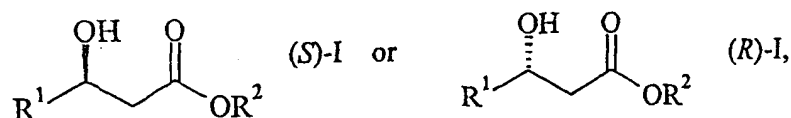


## Claims

1. Process for the preparation of enantiomerically pure (*S*)- or (*R*)-4-halo-3-hydroxybutyrates of formula



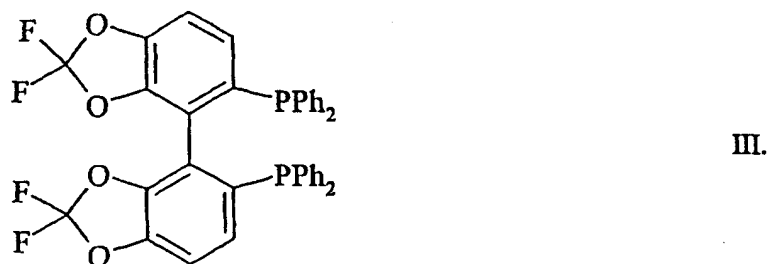
wherein  $\text{R}^1$  is  $\text{CH}_2\text{X}$ ,  $\text{CHX}_2$  or  $\text{CX}_3$  and X independently represents Cl and/or Br and wherein  $\text{R}^2$  is  $\text{C}_{1-6}$ -alkyl,  $\text{C}_{3-6}$ -cycloalkyl, aryl or aralkyl, each aryl or aralkyl being optionally further substituted with one or more  $\text{C}_{1-4}$ -alkyl groups and/or halogen atoms,

which process comprises the asymmetric hydrogenation of 4-halo-3-oxobutyates of formula



wherein  $\text{R}^1$ ,  $\text{R}^2$  and X are as defined above

in the presence of a catalyst of a ruthenium complex comprising a chiral ligand of formula



2. The process of claim 1, wherein the ruthenium complex comprising a ligand of formula III comprises at least one diene, alkene or arene or polar solvent molecule as stabilizing ligand.
3. The process of claim 1 or 2, wherein the ruthenium complex comprising a ligand of formula III comprises at least one molecule of 1,5-cyclooctadiene or *p*-cymene as stabilizing ligand.

4. The process of one of claims 1 to 3, wherein the hydrogenation is carried out in a solution comprising a polar solvent selected from the group consisting of C<sub>1-4</sub>-alcohols, dimethylsulfoxide, dimethylformamide, acetonitrile and mixtures thereof, wherein the solvent optionally contains further solvent additives.
5. The process of any one of claims 1 to 4, wherein the counterion of the ruthenium complex is selected from the group consisting of Cl<sup>-</sup>, Br<sup>-</sup>, I<sup>-</sup>, BF<sub>4</sub><sup>-</sup>, AsF<sub>6</sub><sup>-</sup>, SbF<sub>6</sub><sup>-</sup>, PF<sub>6</sub><sup>-</sup>, ClO<sub>4</sub><sup>-</sup> and OTf<sup>-</sup>.
6. The process of any one of claims 1 to 5, wherein the ruthenium complex is prepared by mixing the complex of formula [Ru<sub>2</sub>Cl<sub>4</sub>(cym)<sub>2</sub>] with the Fluoxphos ligand in a polar solvent.
7. The process of any of claims 1 to 6, wherein the hydrogen pressure during the reaction is in the range of 1 to 60 bar and preferably in the range of 2 to 35 bar.